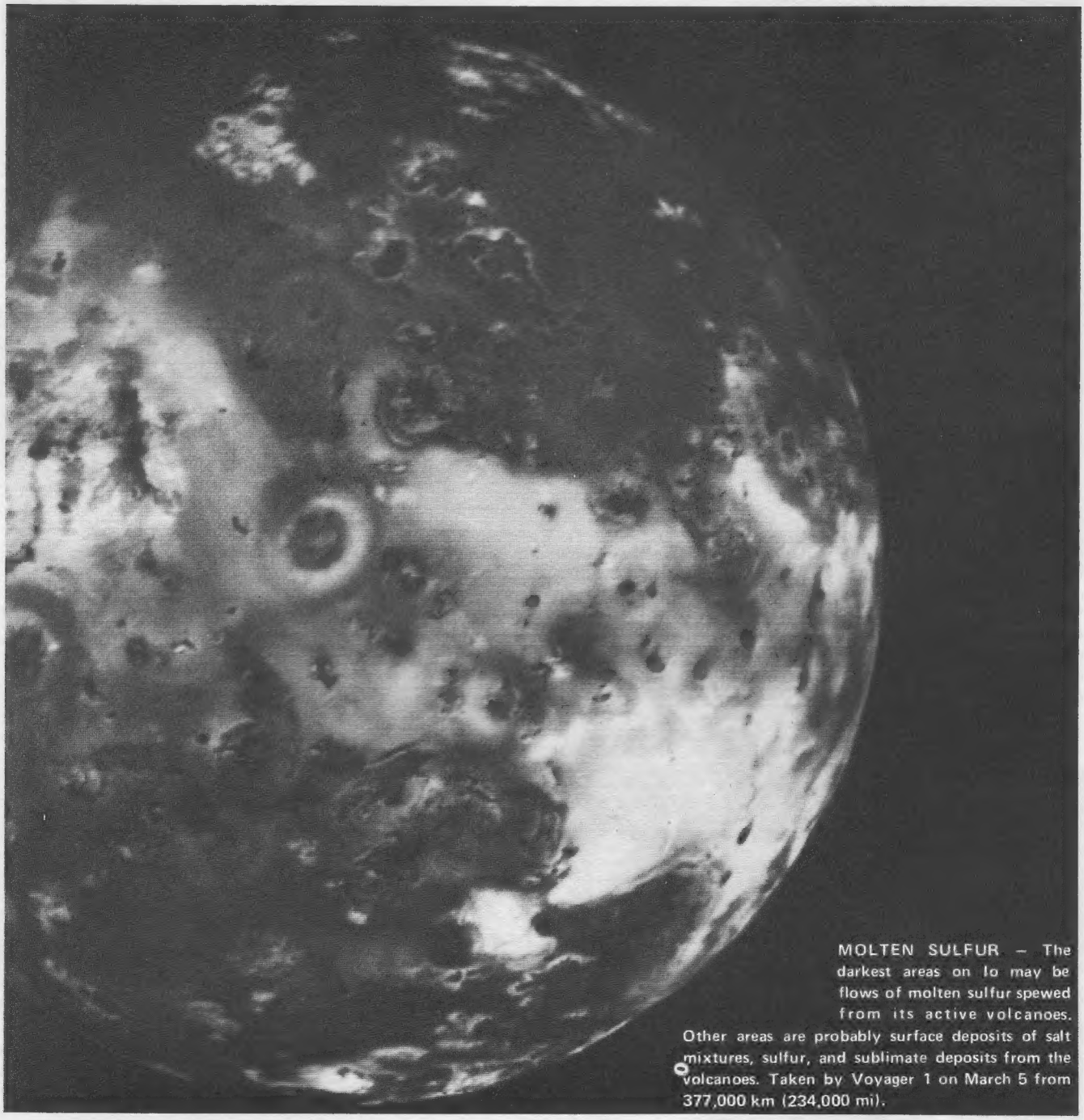
Voyager Bulletin

MISSION STATUS REPORT NO. 39 MARCH 19, 1979



MOLTEN SULFUR – The darkest areas on Io may be flows of molten sulfur spewed from its active volcanoes. Other areas are probably surface deposits of salt mixtures, sulfur, and sublimate deposits from the volcanoes. Taken by Voyager 1 on March 5 from 377,000 km (234,000 mi).

NASA

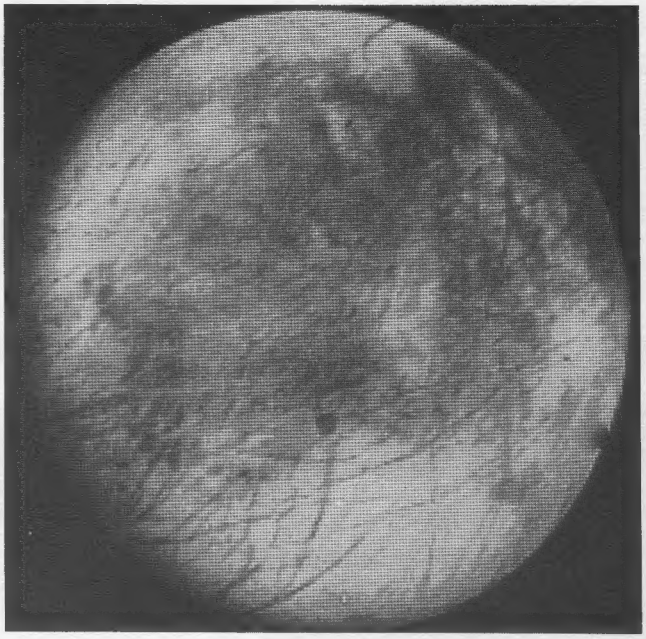
National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

Recorded Mission Status (213) 354-7237
Status Bulletin Editor (213) 354-4438
Public Information Office (213) 354-5011

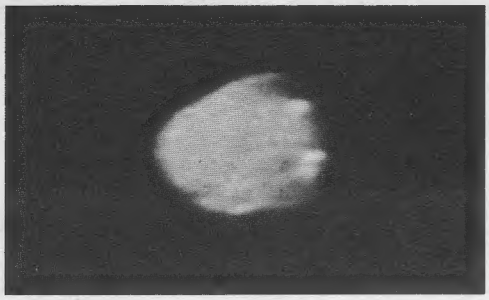
EXPLOSIVE MOON – An enormous volcanic explosion is silhouetted against dark space over Io's bright limb, throwing solid material as high as 160 km (100 mi). With an ejection velocity of about 1930 km (1200 mi) per hour, ejecta would reach the crest of the fountain in a matter of minutes. On Earth, water (steam) is the major gas driving volcanic explosions, but since Io is thought to be extremely dry, other gases must be active. Voyager 1 was about 490,000 km (304,000 mi) from Io when this image was acquired on March 4.

FIREWORKS – Simultaneous eruptions on Io shoot ash more than 260 (160 mi) into the sky. Two eruptions can be seen in this photo, one on the limb, the other on the terminator (the shadow between night and day). Forty times larger and 200 times more brilliant than Earth's full moon, Jupiter illuminates the dark hemisphere of Io. The photo was taken by Voyager 1 on March 8 while 4.5 million km (2.6 million mi) beyond the satellite. This is the photo in which Io's volcanoes were first discovered by JPL optical navigation engineer Linda A. Morabito.



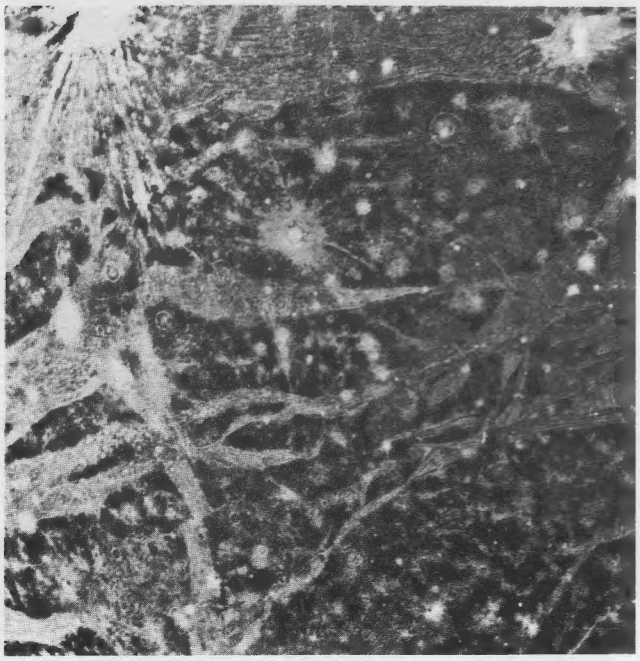
EUROPA – One of the best images of Europa taken by Voyager 1 (from 2 million km) shows systems of long linear structures which criss-cross the surface in various directions. Possible faults or fractures, some of these features are over one thousand km long and about two to three hundred km wide. Voyager 2 is expected to get a closer look at the amber-colored satellite in July, 1979.

CALLISTO – This multi-ring basin (left center) on Callisto consists of a light floored central basin some 300 km (185 mi) in diameter surrounded by at least eight to ten discontinuous but rhythmically spaced ridges. The great number of rings observed around this basin is consistent with its low planetary density and probable low internal strength. These basins are thought to be formed by impacts. Voyager 1 took this photo on March 6 from about 200,000 km (125,000 mi).



PINPOINT OF LIGHT – Tiny, red Amalthea was discovered only 87 years ago. Too small ever to have been round, it has a long history of impact cratering and its red color may be a surface coating rather than a characteristic of the satellite's bulk. The innermost of Jupiter's 13 or 14 known satellites, it whizzes around the planet every 12 hours, only about 111,000 km (69,000 mi) from the cloud tops – outside the newly-discovered ring. Usually overpowered by the brilliance of Jupiter, Amalthea is especially hard to spot from Earth even with a large telescope. In this photo taken by Voyager 1 on March 4, Amalthea appears about 130 km (80 mi) high by 170 km (105 mi) wide.

GANYMEDE – Largest of Jupiter's satellites, Ganymede is about 1-1/2 times the size of our moon but only about half as dense. Therefore, it is probably composed of a mixture of rock and ice. Its features resemble mare and impact craters found on the moon, while the long white filaments resemble rays associated with impacts on the lunar surface. Voyager 1 took this photo on March 4 from a distance of 2.6 million km (1.6 million mi).



IMPACT CRATERS – Numerous impact craters pock the surface of Ganymede. Many of the craters have extensive bright ray systems; the older ones do not. Bright bands traversing the surface in various directions contain an intricate system of alternating linear bright and dark lines which may represent deformation of the crusted ice layer. These lines are particularly evident near the top of the picture. A bright band trending in a north-south direction in the lower left-hand portion of the picture is offset along a bright line, probably due to faulting. Two light circular areas in the right upper center of the picture may be the scars of ancient impact craters which have had their topographic expansion erased by flow of the crystal icy material. This photo was taken by Voyager 1 on March 5 from a range of 246,000 km (153,000 mi).